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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------|-------------|----------------------|---------------------|------------------|
| 10/573,955                | 04/26/2007  | Haibin Huang         | 212/864US           | 1775             |
| 23371                     | 7590        | 05/20/2010           | EXAMINER            |                  |
| CROCKETT & CROCKETT, P.C. |             |                      | DO, CHAT C          |                  |
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| SUITE 200                 |             |                      | ART UNIT            | PAPER NUMBER     |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/573,955             | HUANG ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Chat C. Do             | 2193                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 March 2010.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                              |                                                                   |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                             | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|                                                                                                              | 6) <input type="checkbox"/> Other: _____ .                        |

**DETAILED ACTION**

1. This communication is responsive to Amendment filed 03/17/2010.
2. Claims 1-13 are pending in this application. Claims 1 and 7-11 are independent claims.

This Office Action is made final.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-6, 8-9 and 12-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Re claim 1, the amended claim recites several executions wherein each execution

including an execution of several instructions for performing the intended process.

However, the original specification does not explicitly mention about the computer or execution within the computer to perform the intended process. Further, the original specification completely silences about execution several instructions for performing specific intended steps (e.g. executing instructions...to decompose the transformation

matrix into a rotation...) since it is unclear and silent as what are those instructions.

Claims 8-9 have similar rejection.

Thus, claims 2-6 and 12-13 are also rejected for being dependent on the rejected base claim 1.

***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-13 cite a process, computer system, and medium for transforming data in accordance with a mathematical algorithm. However, claims 1-13 merely disclose series steps/components for transforming data without disclosing a practical/physical application. In addition, method claims 1-6, 8 and 12-13 fail to tie to a specific machine or apparatus for realizing the implementation wherein merely stating computer is not considered as specific machine or apparatus as required. In addition, computer system claims 7 and 9 fail to disclose any specific hardware component(s) to realize the implementation but rather merely mention the instructions, thus they are considered as software per se. The medium claims 10-11 fail to explicitly define the tangible medium neither in specification or remark. Further, the medium claims are drawn to a "computer readable medium". The specification is silent regarding the meaning of this term. Thus, applying the broadest reasonable interpretation in light of the specification and taking

into account the meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art (MPEP 2111), the claim as a whole cover both transitory and non-transitory media. A transitory medium does not fall into any of the four categories of invention (process, machine, manufacture, or composition of matter). Therefore, claims 1-13 are directed to non-statutory subject matter.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ralf et al. (“Audio Coding based on Integer Transform”).

Re claim 1, Ralf et al. disclose in the article a process carried out by a computer for determining and outputting a transforming element for a given transformation function for a transformation of a digital signal representing audio, video or an image, which transformation function comprises a transformation matrix and corresponds to a transformation of a digital signal from the time domain into the frequency domain or vice versa (e.g. by DCT transformation expression in page 2 right column wherein transformation would convert the time data domain to frequency data domain), comprising the steps of:

executing instructions on the computer that cause the computer to decompose the transformation matrix into a rotation matrix and an auxiliary matrix (e.g. section "The MDCT" in pages 2-3) which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix (e.g. property of the decomposition as by mathematically multiplying the matrix by itself would produce a permutation matrix with integer diagonally whenever  $\pi/2$ );

executing instructions on the computer that cause the computer to decompose the rotation matrix and the auxiliary matrix into a plurality of lifting matrices (e.g. section "The Lifting Scheme" in page 4);

executing instructions on the computer that cause the computer to determine the transforming element comprised of a plurality of lifting stages which correspond to the lifting matrices (e.g. wherein each of the matrix can be decomposed into three Lifting Stages in page 4).

Re claim 2, Ralf et al. further disclose in the article the transformation function is a DCT-I transformation function, DCT-IV transformation function (e.g. section "MDCT by DCT-IV and Givens Rotations" in pages 2-3), DST-I transformation function, DST-IV transformation function, DFT-I transformation function, DFT-IV transformation function, DWT-I transformation function or DWT-IV transformation function.

Re claim 3, Ralf et al. further disclose in the article the lifting matrices are each block-triangular matrices with two invertible integer matrices in one diagonal (e.g. section "The Lifting Scheme" in page 4).

Re claim 4, Ralf et al. further disclose in the article the invertible integer matrices in each lifting matrix are identity matrices or negative identity matrices (e.g. section "The Lifting Scheme" in page 4).

Re claim 5, Ralf et al. further disclose in the article the transforming element comprises five lifting stages (e.g. page 4 wherein the two of the matrix is merged into one).

Re claim 6, Ralf et al. further disclose in the article an audio signal or a video signal is used as the digital signal (e.g. abstract in page 1).

Re claim 7, it is a device claim having similar limitations cited in claim 1. Thus, claim 7 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 8, Ralf et al. disclose in the article a method carried out by a computer for transforming a digital signal from the time domain into the frequency domain or vice versa using a transforming element representing audio, video or an image (e.g. by DCT transformation expression in page 2 right column wherein transformation would convert the time data domain to frequency data domain), wherein

the transforming element corresponds to a given transformation function (e.g. section "The Modified DCT" in page 2), which transformation function comprises a transformation matrix wherein the transforming element is determined by a process comprising:

executing the instructions on the computer that cause the computer to decompose the transformation matrix into a rotation matrix and an auxiliary

matrix (e.g. section "The MDCT" in pages 2-3) which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix (e.g. property of the decomposition as by mathematically multiplying the matrix by itself would produce a permutation matrix with integer diagonally whenever  $\pi/2$ );

executing the instructions on the computer that cause the computer to determine the rotation matrix and the auxiliary matrix each into a plurality of lifting matrices (e.g. section "The Lifting Scheme" in page 4); and

executing the instructions on the computer that cause the computer to determine the transforming element to comprise of a plurality of lifting stages which correspond to the lifting matrices (e.g. wherein each of the matrix can be decomposed into three Lifting Stages in page 4);

wherein each lifting stage comprises the processing of sub-blocks of the digital signal by an auxiliary transformation and by a rounding unit (e.g. pages 3-4).

Re claim 9, it is a device claim having similar limitations cited in claim 8. Thus, claim 9 is also rejected under the same rationale as cited in the rejection of rejected claim 8.

Re claim 10, it is a computer readable medium claim having similar limitations cited in claim 1. Thus, claim 10 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 11, it is a computer readable medium claim having similar limitations cited in claim 8. Thus, claim 11 is also rejected under the same rationale as cited in the rejection of rejected claim 8.

Re claim 12, it has similar limitations cited in claim 3. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 13, it has similar limitations cited in claim 4. Thus, claim 13 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

***Response to Amendment***

9. The amendment filed 03/17/2010 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

All the newly added limitations in claims 1 and 8-9 are considered as new matter introduce into the original disclosure as clearly addressed in the above rejection.

Applicant is required to cancel or clearly point out the support of the new matter in the reply to this Office Action.

***Response to Arguments***

10. Applicant's arguments filed 03/17/2010 have been fully considered but they are not persuasive.

a. The applicant argues in pages 9-10 for claims that the claims are now statutory in according to the amended claims since (1) the processes are carried out by a computer; (2) the device claims are directed to a specific device as namely a computer system wherein computer system is not software per se; (3) one ordinary would recognize the computer readable medium as a physical medium such as a computer readable disk.

The examiner respectfully submits that these amended claims are not quite fall into the statutory categories because (1) computer is not a specific or particular machine wherein a general purpose computer/processor is used to compute a mathematical algorithm; (2) there is no clear hardware component in the claim, except the computer system in preamble, particularly there is no hardware structure or component within the body of the claim for implementing the processes or executing the instruction of processes, thus these claims maintained and considered as software per se; and (3) The claim is drawn to a "computer readable medium". The specification is silent regarding the meaning of this term. Thus, applying the broadest reasonable interpretation in light of the specification and taking into account the meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art (MPEP 2111), the claim as a whole cover both transitory and non-transitory media. A transitory medium does not fall into any of the four categories of invention (process, machine, manufacture, or composition of matter).

b. The applicant argues in pages 10-13 for claims 1-13 that Geiger does not disclose the first limitation “decompose the transformation matrix...with an integer diagonal matrix” wherein all the definition of matrices are well-known as defined in attached affidavits from wikipedia. Particularly, the Given rotations matrix would not be a permutation matrix and an integer diagonal matrix.

The examiner respectfully submits that the examiner had fully considered the attached affidavits and the remark in light of the specification, but would like to maintain the rejection due as following: (1) the attached affidavits does not mention about the Permutation matrix, however the examiner found the general definition of permutation matrix at

[http://en.wikipedia.org/wiki/Permutation\\_matrix](http://en.wikipedia.org/wiki/Permutation_matrix) wherein the permutation can be considered as identity matrix or identity permutation. Based on the definition (applicant's definition and also found wikipedia's definition), the given rotation matrix can be the permutation matrix with an integer diagonal matrix given alpha in the given rotation is either  $n\pi/2$  as  $[G] = [\cos(\alpha) \ -\sin(\alpha); \ \sin(\alpha) \ \cos(\alpha)]$ ,  $[G]*[G] = [G]^2 = -1*[1 \ 0; \ 0 \ 1] = [-1 \ 0; \ 0 \ -1]*[1 \ 0; \ 0 \ 1]$ . Without specifically defining the auxiliary matrix within the specification, the auxiliary matrix is equivalent to the Given matrix as seen in Geiger with the same/equivalent property of the auxiliary matrix which is squaring the Given matrix would be equal to  $P*I$ .

*Conclusion*

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHAT C. DO whose telephone number is (571)272-3721. The examiner can normally be reached on Tue-Fri 9:00AM to 7:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chat C. Do/  
Primary Examiner, Art Unit 2193

May 18, 2010